

## CLAIMS

What is claimed is:

1. A method of generating a customized report from relational data stored in a database, said method comprising:
  - providing metadata associated with the data in the database, said metadata describing the data according to one or more characteristics of the data;
  - receiving a request for information from a user; and
  - executing a predefined procedure for retrieving selected data from the database in response to the request for information, said procedure constructing a query as a function of the characteristics of the data as described by the metadata for optimizing retrieval of the selected data.
2. The method of claim 1, further comprising generating the report in response to the query, said report including the selected data retrieved from the database when the procedure is executed.
3. The method of claim 1, wherein the request from the user specifies a format for the report, search criteria, or both.

4. The method of claim 1, further comprising defining a plurality of tables for organizing the metadata relative to the data in the database.
5. The method of claim 4, wherein one or more of the tables is exposed as a dimension having one or more columns of attributes.
6. The method of claim 5, further comprising creating a structured query language (SQL) view for each of the tables to be exposed as a dimension.
7. The method of claim 4, further comprising creating, for each fact, a fact view to expose attributes and measures for querying.
8. The method of claim 4, wherein each table contains metadata associated with one of the following: an attribute; a dimension; a measure; or a fact.
9. The method of claim 1, wherein executing the predefined procedure to construct the query includes matching the metadata to search criteria in the request for information.
10. The method of claim 1, wherein the query constructed by the predefined procedure comprises one or more SQL statements.

11. The method of claim 1, wherein providing the metadata further comprises defining measures and associating the defined measures to applicable facts.

12. The method of claim 1, further comprising generating a SQL view to display information relating to the query constructed by the predefined procedure.

13. The method of claim 1, further comprising defining a query syntax according to which the request for information identifies search criteria for the selected data.

14. The method of claim 13, further comprising defining a plurality of tables for organizing the metadata relative to the data in the database and estimating a size of each of the tables.

15. The method of claim 14, further comprising comparing the search criteria in the request for information to the metadata and determining which of the tables matches at least substantially the search criteria, and wherein the procedure constructs the query based on the matched table having the smallest estimated size.

16. The method of claim 15, wherein determining which of the tables matches comprises identifying which of the tables contain metadata associated

with at least substantially all attributes and measures specified in the search criteria.

17. The method of claim 1, wherein the request for information according to the query syntax comprises one or more delimited lists.

18. The method of claim 1, wherein the request for information according to the query syntax includes a user-selected input representative of one or more of the following: a column list parameter; a slice parameter; a fact-type parameter; a crosstab result parameter; an options parameter; and a sort order parameter.

19. The method of claim 18, wherein the column list parameter comprises a delimited list of dimensions, measures, or both, said delimited list representing a type of data to be retrieved from the database in response to the query.

20. The method of claim 18, wherein the slice parameter specifies a date range search criteria.

21. The method of claim 18, wherein the slice parameter specifies a name search criteria.

22. The method of claim 18, wherein the options parameter specifies one or more of the following: a debugging option; a non-sorting option; a row limiting option; and a hierarchical navigation option.

23. The method of claim 1, wherein the predefined procedure comprises a template for generating a set of SQL statements for implementing the query.

24. One or more computer-readable media have computer-executable instructions for performing the method of claim 1.

25. A method of constructing a query for retrieving selected data from a database in response to a request from a user for information, said method comprising:

defining metadata to describe data in the database according to one or more characteristics of the data;

defining a plurality of tables for organizing the metadata relative to the data, one or more of the tables being exposed as a dimension having at least one column of attributes;

comparing search criteria specified by the request for information to the metadata attributes; and

executing a predefined procedure in response to the request for information, said procedure generating a set of structured query language (SQL)

statements as a function of the comparison between the search criteria and the metadata attributes for implementing the query to optimize retrieval of the selected data from the database.

26. The method of claim 25, further comprising generating the report in response to the query, said report including the selected data retrieved from the database when the procedure is executed.

27. The method of claim 25, further comprising creating a SQL view for each of the tables to be exposed as a dimension.

28. The method of claim 25, further comprising creating, for each fact, a fact view to expose attributes and measures for querying.

29. The method of claim 25, wherein each table contains metadata associated with one of the following: an attribute; a dimension; a measure; or a fact.

30. The method of claim 25, wherein defining the metadata further comprises defining measures and associating the defined measures to applicable facts.

31. The method of claim 25, further comprising generating a SQL view to display information relating to the query constructed by the predefined procedure.

32. The method of claim 25, further comprising defining a query syntax according to which the request for information identifies search criteria for the selected data.

33. The method of claim 32, further comprising estimating a size of each of the tables.

34. The method of claim 33, wherein comparing comprises determining which of the tables matches at least substantially the search criteria, and wherein the procedure constructs the query based on the matched table having the smallest estimated size.

35. The method of claim 34, wherein determining which of the tables matches comprises identifying which of the tables contain metadata associated with at least substantially all attributes and measures specified in the search criteria.

36. The method of claim 25, wherein the request for information according to the query syntax comprises one or more user-selected parameters

representing a type of data to be retrieved from the database in response to the query.

37. One or more computer-readable media have computer-executable instructions for performing the method of claim 25.

38. One or more computer-readable media having computer-executable components for generating a report from data stored in a database, said computer-readable media comprising:

a metadata component for describing the data in the database according to one or more characteristics of the data;

an interface component for receiving a request for information from a user; and

a procedure component responsive to the request for information for constructing a query to retrieve selected data from the database, said procedure component constructing the query as a function of the characteristics of the data as described by the metadata component for optimizing retrieval of the selected data.

39. The computer-readable media of claim 38, wherein the request from the user specifies a format for the report, search criteria, or both.



40. The computer-readable media of claim 38, wherein the metadata component comprises a plurality of tables containing metadata, said tables organizing the metadata relative to the data in the database.

41. The computer-readable media of claim 40, wherein at least one of the tables is exposed as a dimension having one or more columns of attributes.

42. The computer-readable media of claim 41, wherein the metadata component includes a structured query language (SQL) view for each of the tables to be exposed as a dimension.

43. The computer-readable media of claim 42, wherein the metadata component automatically populates the metadata through the SQL view.

44. The computer-readable media of claim 40, wherein the metadata component includes, for each fact, a fact view to expose attributes and measures for querying.

45. The computer-readable media of claim 40, wherein each table contains metadata associated with one of the following: an attribute; a dimension; a measure; or a fact.

46. The computer-readable media of claim 40, wherein the procedure component compares the search criteria in the request for information to the metadata and determines which of the tables matches at least substantially the search criteria, and wherein the procedure component constructs the query based on the matched table having the smallest estimated size.

47. The computer-readable media of claim 38, wherein the query constructed by the procedure component comprises one or more SQL statements.

48. The computer-readable media of claim 38, wherein the interface component comprises a query syntax according to which the request for information identifies search criteria for the selected data.

49. The computer-readable media of claim 38, wherein the request for information according to the query syntax comprises one or more delimited lists.

50. The computer-readable media of claim 38, wherein the request for information according to the query syntax includes a user-selected input representative of one or more of the following: a column list parameter; a slice parameter; a fact-type parameter; a crosstab result parameter; an options parameter; and a sort order parameter.

51. The computer-readable media of claim 50, wherein the column list parameter comprises a delimited list of dimensions, measures, or both, representing a type of data to be retrieved from the database in response to the query.

52. The computer-readable media of claim 50, wherein the slice parameter specifies a date range search criteria.

53. The computer-readable media of claim 50, wherein the slice parameter specifies a name search criteria.

54. The computer-readable media of claim 50, wherein the options parameter specifies one or more of the following: a debugging option; a non-sorting option; a row limiting option; and a hierarchical navigation option.

55. The computer-readable media of claim 38, wherein the procedure component comprises a predefined template for generating a set of SQL statements for implementing the query.

56. The computer-readable media of claim 38, wherein the interface component comprises an application programming interface.